

SEQUENCE LISTING

<110> Quan, Pan S.

<120> Visualization of Introduced DNA in Transit by In Situ Hybridization

<130> 79811-3

<150> US 60/368,524

<151> 2002-04-01

<160> 11

<170> PatentIn version 3.2

<210> 1

<211> 887

<212> PRT

<213> Arabidopsis thaliana

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 35 40 45

Met Ala Lys Pro Arg Val Leu Ala Leu Ser Val Lys Ser Lys Gly Pro
 50 55 60

Arg Lys Lys Ala Phe Leu Arg Val Met Lys Tyr Ser Ser Gly Gly Val
 65 70 75 80

Leu Glu Pro Ala Lys Met Tyr Lys Leu Lys His Leu Ser Lys Val Glu
 85 90 95

Val Ile Thr Asn Asp Pro Ser Gly Cys Thr Phe Thr Leu Gly Phe Asp
 100 105 110

Asn Leu Arg Ser Gln Ser Val Ala Pro Pro Gln Trp Thr Met Arg Asn
 115 120 125

Thr Asp Asp Arg Asn Arg Leu Leu Val Cys Ile Leu Asn Ile Cys Lys
 130 135 140

Asp Val Leu Gly Arg Leu Pro Lys Val Val Gly Ile Asp Ile Val Glu
 145 150 155 160

Met Ala Leu Trp Ala Lys Asp Asn Thr Pro Val Val Thr Thr Gln Arg
 165 170 175

Ser Thr Glu Asp Gly Glu Pro Val Ala Glu Ser Val Thr Glu Ser Asp
 180 185 190

Leu Lys Val Thr Val Glu Lys Glu Leu Val Ser Gln Ala Glu Glu Glu
 195 200 205

Asp Met Glu Ala Leu Leu Gly Thr Tyr Val Met Gly Ile Gly Glu Ala
 210 215 220

Glu Ala Phe Ser Glu Arg Leu Lys Arg Glu Leu Gln Ala Leu Glu Ala
 225 230 235 240

Ala Asn Val His Ala Ile Leu Glu Ser Glu Pro Leu Val Asp Glu Val
 245 250 255

Leu Asn Gly Leu Glu Ala Ala Thr Asn Ile Val Asp Asp Met Asp Glu
 260 265 270

Trp Leu Gly Ile Phe Asn Ile Lys Leu Arg His Met Arg Glu Asp Ile
 275 280 285

Glu Ser Ile Glu Thr Arg Asn Asn Lys Leu Glu Met Gln Ser Val Asn
 290 295 300

Asn Lys Ala Leu Ile Glu Glu Leu Asp Lys Val Ile Glu Arg Leu Arg
 305 310 315 320

Val Pro Ser Glu Tyr Ala Ala Ser Leu Thr Gly Gly Ser Phe Asp Glu
 325 330 335

Ala Asp Met Leu Gln Asn Ile Glu Ala Cys Glu Trp Leu Ala Lys Ala
 340 345 350

Leu Arg Gly Leu Glu Val Pro Asn Leu Asp Pro Ile Tyr Ala Asn Met
 355 360 365

Arg Ala Val Lys Glu Lys Arg Ala Glu Leu Glu Lys Leu Lys Ala Thr
 370 375 380

Phe Val Arg Arg Ala Ser Glu Phe Leu Arg Asn Tyr Phe Ala Ser Leu
 385 390 395 400

Val Asp Phe Met Val Ser Asp Lys Ser Tyr Phe Ser Gln Arg Gly Gln

			405						410					415		
Leu	Lys	Arg	Pro	Asp	His	Ala	Asp	Leu	Arg	Tyr	Lys	Cys	Arg	Thr	Tyr	
			420					425					430			
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Pro	Leu	Arg	Lys	Ala	Tyr	Cys	Ser	Ser	Leu	Asn	Leu	Leu	Leu	Arg	Arg	
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Glu	Ala	Arg	Glu	Phe	Ala	Asn	Glu	Leu	Arg	Ala	Ser	Thr	Lys	Val	Ser	
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Ala	Asn	Thr	Asp	Thr	Ser	Ala	Val	Ser	Asp	Ala	Tyr	Ala	Lys	Met	Leu	
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Thr	Ile	Phe	Ile	Pro	Leu	Leu	Val	Asp	Glu	Ser	Ser	Phe	Phe	Ala	His	
		515					520					525				
Phe	Met	Cys	Phe	Glu	Val	Pro	Ala	Leu	Ala	Pro	Pro	Gly	Gly	Ala	Gly	
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Asn	Ser	Pro	Asp	Leu	Thr	Ala	Leu	Asn	Glu	Ser	Leu	Gln	Asp	Leu	Leu	
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Ile	Asp	Pro	Leu	Arg	Cys	Ile	Ser	Met	His	Gly	Ile	Thr	Glu	Arg	Tyr	
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Leu	Ser	Gly	Gln	Lys	Ala	Asp	Ala	Ala	Gly	Phe	Val	Arg	Leu	Leu	Leu	
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Gly	Asp	Leu	Glu	Ser	Arg	Val	Ser	Met	Gln	Phe	Ser	Arg	Phe	Val	Asp	
				645					650					655		

Glu Ala Cys His Gln Ile Glu Arg Asn Glu Arg Asn Val Arg Gln Met
 660 665 670

Gly Val Leu Pro Tyr Ile Pro Arg Phe Ala Ala Leu Ala Thr Arg Met
 675 680 685

Glu Gln Tyr Ile Gln Gly Gln Ser Arg Asp Leu Val Asp Gln Ala Tyr
 690 695 700

Thr Lys Phe Val Ser Ile Met Phe Val Thr Leu Glu Lys Ile Ala Gln
 705 710 715 720

Gln Asp Pro Lys Tyr Ala Asp Ile Leu Leu Leu Glu Asn Tyr Ala Ala
 725 730 735

Phe Gln Asn Ser Leu Tyr Asp Leu Ala Asn Val Val Pro Thr Leu Ala
 740 745 750

Lys Phe Tyr His Gln Ala Ser Glu Ala Tyr Glu Gln Ala Cys Thr Arg
 755 760 765

His Ile Ser Met Ile Ile Tyr Tyr Gln Phe Glu Arg Leu Phe Gln Phe
 770 775 780

Ala Lys Lys Ile Glu Asp Phe Met Tyr Thr Ile Thr Pro Glu Glu Ile
 785 790 795 800

Pro Phe Gln Leu Gly Leu Ser Lys Val Glu Leu Arg Lys Met Leu Lys
 805 810 815

Ser Ser Leu Ser Gly Val Asp Lys Ser Ile Ala Ala Met Tyr Lys Lys
 820 825 830

Leu Gln Lys Asn Leu Ala Ser Glu Glu Leu Leu Pro Ser Leu Trp Asp
 835 840 845

Lys Cys Lys Lys Glu Phe Leu Asp Lys Tyr Glu Ser Phe Val Gln Leu
 850 855 860

Val Ala Lys Val Tyr Pro Ser Glu Asn Val Pro Gly Val Thr Glu Met
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Arg Gly Leu Leu Ala Ser Met
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 <213> Artificial

<220>
 <223> GUS-1 primer

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<210> 3
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 <212> DNA
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 <212> DNA
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 <212> DNA
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<210> 8
 <211> 894
 <212> PRT
 <213> Homo sapiens

<400> 8

Met Thr Ala Ile Lys His Ala Leu Gln Arg Asp Ile Phe Thr Pro Asn
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Asp Glu Arg Leu Leu Ser Ile Val Asn Val Cys Lys Ala Gly Lys Lys
 20 25 30

Lys Lys Asn Cys Phe Leu Cys Ala Thr Val Thr Thr Glu Arg Pro Val
 35 40 45

Gln Val Lys Val Val Lys Val Lys Lys Ser Asp Lys Gly Asp Phe Tyr
 50 55 60

Lys Arg Gln Ile Ala Trp Ala Leu Arg Asp Leu Ala Val Val Asp Ala

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Lys	Asp	Ala	Ile	Lys	Glu	Asn	Pro	Glu	Phe	Asp	Leu	His	Phe	Glu	Lys
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Ile	Tyr	Lys	Trp	Val	Ala	Ser	Ser	Thr	Ala	Glu	Lys	Asn	Ala	Phe	Ile
			100					105					110		
Ser	Cys	Ile	Trp	Lys	Leu	Asn	Gln	Arg	Tyr	Leu	Arg	Lys	Lys	Ile	Asp
		115					120					125			
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Gln	Glu	Leu	Asn	Ala	Arg	Glu	Glu	Gln	Asp	Ile	Glu	Ile	Met	Met	Glu
				165					170					175	
Gly	Cys	Glu	Tyr	Ala	Ile	Ser	Asn	Ala	Glu	Ala	Phe	Ala	Glu	Lys	Leu
			180					185					190		
Ser	Arg	Glu	Leu	Gln	Val	Leu	Asp	Gly	Ala	Asn	Ile	Gln	Ser	Ile	Met
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Ala	Ser	Glu	Lys	Gln	Val	Asn	Ile	Leu	Met	Lys	Leu	Leu	Asp	Glu	Ala
		210					215				220				
Leu	Lys	Glu	Val	Asp	Gln	Ile	Glu	Leu	Lys	Leu	Ser	Ser	Tyr	Glu	Glu
225					230					235					240
Met	Leu	Gln	Ser	Val	Lys	Glu	Gln	Met	Asp	Gln	Ile	Ser	Glu	Ser	Asn
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Ile	Glu	Phe	Leu	Val	Asn	His	Met	Asp	Leu	Ala	Lys	Gly	His	Ile	Lys
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Thr	Asn	Ala	Ala	Asp	Ala	Leu	Leu	Gln	Cys	Met	Asn	Val	Ala	Leu	Arg
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Pro Gly His Asp Leu Leu Leu Ala Val Lys Gln Gln Gln Gln Arg Phe
 325 330 335

Ser Asp Leu Arg Glu Leu Phe Ala Arg Arg Leu Ala Ser His Leu Asn
 340 345 350

Asn Val Phe Val Gln Gln Gly His Asp Gln Ser Ser Thr Leu Ala Gln
 355 360 365

His Ser Val Glu Leu Thr Leu Pro Asn His His Pro Phe His Arg Asp
 370 375 380

Leu Leu Arg Tyr Ala Lys Leu Met Glu Trp Leu Lys Ser Thr Asp Tyr
 385 390 395 400

Gly Lys Tyr Glu Gly Leu Thr Lys Asn Tyr Met Asp Tyr Leu Ser Arg
 405 410 415

Leu Tyr Glu Arg Glu Ile Lys Asp Phe Phe Glu Val Ala Lys Ile Lys
 420 425 430

Met Thr Gly Thr Thr Lys Glu Ser Lys Lys Phe Ala Thr Leu Pro Arg
 435 440 445

Lys Glu Ser Ala Val Lys Gln Glu Thr Glu Ser Leu His Gly Ser Ser
 450 455 460

Gly Lys Leu Thr Gly Ser Thr Ser Ser Leu Asn Lys Leu Ser Val Gln
 465 470 475 480

Ser Ser Gly Asn Arg Arg Ser Gln Ser Ser Ser Leu Leu Asp Met Gly
 485 490 495

Asn Met Ser Ala Ser Asp Leu Asp Val Ala Asp Arg Thr Lys Phe Asp
 500 505 510

Lys Ile Phe Glu Gln Val Leu Ser Glu Leu Glu Pro Leu Cys Leu Ala
 515 520 525

Glu Gln Asp Phe Ile Ser Lys Phe Phe Lys Leu Gln Gln His Gln Ser
 530 535 540

Met Pro Gly Thr Met Ala Glu Ala Glu Asp Leu Asp Gly Gly Thr Leu
 545 550 555 560

Ser Arg Gln His Asn Cys Gly Thr Pro Leu Pro Val Ser Ser Glu Lys
 565 570 575

Asp Met Ile Arg Gln Met Met Ile Lys Ile Phe Arg Cys Ile Glu Pro
 580 585 590

Glu Leu Asn Asn Leu Ile Ala Leu Gly Asp Lys Ile Asp Ser Phe Asn
 595 600 605

Ser Leu Tyr Met Leu Val Lys Met Ser His His Val Trp Thr Ala Gln
 610 615 620

Asn Val Asp Pro Ala Ser Phe Leu Ser Thr Thr Leu Gly Asn Val Leu
 625 630 635 640

Val Thr Val Lys Arg Asn Phe Asp Lys Cys Ile Ser Asn Gln Ile Arg
 645 650 655

Gln Met Glu Glu Val Lys Ile Ser Lys Lys Ser Lys Val Gly Ile Leu
 660 665 670

Pro Phe Val Ala Glu Phe Glu Glu Phe Ala Gly Leu Ala Glu Ser Ile
 675 680 685

Phe Lys Asn Ala Glu Arg Arg Gly Asp Leu Asp Lys Ala Tyr Thr Lys
 690 695 700

Leu Ile Arg Gly Val Phe Val Asn Val Glu Lys Val Ala Asn Glu Ser
 705 710 715 720

Gln Lys Thr Pro Arg Asp Val Val Met Met Glu Asn Phe His His Ile
 725 730 735

Phe Ala Thr Leu Ser Arg Leu Lys Ile Ser Cys Leu Glu Ala Glu Lys
 740 745 750

Lys Glu Ala Lys Gln Lys Tyr Thr Asp His Leu Gln Ser Tyr Val Ile
 755 760 765

Tyr Ser Leu Gly Gln Pro Leu Glu Lys Leu Asn His Phe Phe Glu Gly
 770 775 780

Val Glu Ala Arg Val Ala Gln Gly Ile Arg Glu Glu Glu Val Ser Tyr
 785 790 795 800

Gln Leu Ala Phe Asn Lys Gln Glu Leu Arg Lys Val Ile Lys Glu Tyr
 805 810 815

Pro Gly Lys Glu Val Lys Lys Gly Leu Asp Asn Leu Tyr Lys Lys Val
 820 825 830

Asp Lys His Leu Cys Glu Glu Glu Asn Leu Leu Gln Val Val Trp His
 835 840 845

Ser Met Gln Asp Glu Phe Ile Arg Gln Tyr Lys His Phe Glu Gly Leu
 850 855 860

Ile Ala Arg Cys Tyr Pro Gly Ser Gly Val Thr Met Glu Phe Thr Ile
 865 870 875 880

Gln Asp Ile Leu Asp Tyr Cys Ser Ser Ile Ala Gln Ser His
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 <213> Rattus norvegicus

<400> 9

Met Met Pro Val Ala Ser Ser Leu Ile Lys Met Pro Gly Leu Phe His
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 20 25 30

Thr Val Ile Pro Asn Thr Asp Thr Thr Ser Gly Ser Phe Asn Tyr Met
 35 40 45

Asp Tyr Leu Ser Arg Leu Tyr Glu Arg Glu Ile Lys Asp Phe Phe Glu
 50 55 60

Val Ala Lys Met Lys Met Thr Gly Thr Thr Lys Glu Ser Lys Lys Phe
65 70 75 80

Ala Thr Leu Pro Arg Lys Glu Ser Ala Val Lys Gln Glu Thr Glu Arg
85 90 95

Met Ser Gln Gly Arg Val Ser Cys Ser Val Ser Thr Val Leu Ser Asp
100 105 110

Pro His Arg Cys Pro Ile Cys Phe Gly Leu Glu Ser Thr Ile Ala Leu
115 120 125

Pro Ser Gly Gln Asp Pro Val Ser Leu His Gly Ser Ser Gly Lys Leu
130 135 140

Thr Gly Ser Thr Ser Ser Leu Asn Lys Leu Ser Val Gln Ser Ser Gly
145 150 155 160

Ser Arg Arg Ser Gln Ser Ser Ser Leu Leu Asp Met Gly Asn Met Ser
165 170 175

Ala Ser Asp Leu Asp Val Ala Asp Arg Thr Lys Phe Asp Lys Ile Phe
180 185 190

Glu Gln Val Leu Ser Glu Leu Glu Pro Leu Cys Leu Ala Glu Gln Asp
195 200 205

Phe Ile Ser Lys Phe Phe Lys Leu Gln Gln His Gln Asn Leu Ser Ala
210 215 220

Ser Met Ala Glu Ala Glu Asp Leu Asp Gly Gly Ser Leu Ser Arg Pro
225 230 235 240

Gln Ser Ser Gly Ser Leu Leu Pro Val Ser Ser Glu Lys Asp Met Ile
245 250 255

Arg Gln Met Met Ile Lys Ile Phe Arg Cys Ile Glu Pro Glu Leu Asn
260 265 270

Asn Leu Ile Ala Leu Gly Asp Lys Val Asp Ser Phe Asn Ser Leu Tyr
275 280 285

Met Leu Val Lys Met Ser His His Val Trp Thr Ala Gln Asn Val Asp
290 295 300

Pro Ala Ser Phe Leu Ser Thr Thr Leu Gly Asn Val Leu Val Thr Val

305		310		315		320
Lys Arg Asn Phe Asp Lys Cys Ile Ser Asn Gln Ile Arg Gln Met Glu	325		330		335	
Glu Val Lys Ile Ser Lys Lys Ser Lys Val Gly Ile Leu Pro Phe Val	340		345		350	
Ala Glu Phe Glu Glu Phe Ala Gly Leu Ala Glu Ser Ile Phe Lys Ser	355		360		365	
Ala Glu Arg Arg Gly Asp Leu Asp Lys Ala Tyr Thr Lys Leu Ile Arg	370		375		380	
Gly Val Phe Ile Asn Val Glu Lys Val Ala Asn Glu Ser Gln Lys Thr	385	390		395		400
Pro Arg Asp Val Val Met Met Glu Asn Phe His His Ile Phe Ala Thr		405		410		415
Leu Ser Arg Leu Lys Ile Ser Cys Leu Glu Ala Glu Lys Lys Glu Ala		420		425		430
Lys Gln Lys Tyr Thr Asp His Leu Gln Ser Tyr Val Ile Tyr Ser Leu		435		440		445
Gly Gln Pro Leu Glu Lys Leu Asn His Phe Phe Glu Gly Val Glu Ala		450		455		460
Arg Val Ala Gln Gly Ile Arg Glu Glu Glu Val Ser Tyr Gln Leu Ala		465		470		475
Phe Asn Lys Gln Glu Leu Arg Lys Val Ile Lys Glu Tyr Pro Gly Lys		485		490		495
Glu Val Lys Lys Gly Leu Asp Asn Leu Tyr Lys Lys Val Asp Lys His		500		505		510
Leu Cys Glu Glu Glu Asn Leu Leu Gln Val Val Trp His Ser Met Gln		515		520		525
Asp Glu Phe Ile Arg Gln Tyr Lys His Phe Glu Gly Leu Ile Ala Arg		530		535		540
Cys Tyr Pro Gly Ser Gly Val Thr Met Glu Phe Thr Ile Gln Asp Ile		545		550		555
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Leu Asp Tyr Cys Ser Ser Ile Ala Gln Ser His
565 570

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<211> 894
<212> PRT
<213> Mus musculus
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Asp Glu Arg Leu Leu Ser Ile Val Asn Val Cys Lys Ala Gly Lys Lys
20 25 30

Lys Lys Asn Cys Phe Leu Cys Ala Thr Val Thr Thr Glu Arg Pro Val
35 40 45

Gln Val Lys Val Val Lys Val Lys Lys Ser Asp Lys Gly Asp Phe Tyr
50 55 60

Lys Arg Gln Ile Ala Trp Ala Leu Arg Asp Leu Ala Val Val Asp Ala
65 70 75 80

Lys Asp Ala Ile Lys Glu Asn Pro Glu Phe Asp Leu His Phe Glu Lys
85 90 95

Val Tyr Lys Trp Val Ala Ser Ser Thr Ala Glu Lys Asn Ala Phe Ile
100 105 110

Ser Cys Ile Trp Lys Leu Asn Gln Arg Tyr Leu Arg Lys Lys Ile Asp
115 120 125

Phe Val Asn Val Ser Ser Gln Leu Leu Glu Glu Ser Val Pro Ser Gly
130 135 140

Glu Asn Gln Ser Val Ala Gly Gly Asp Glu Glu Ala Val Asp Glu Tyr
145 150 155 160

Gln Glu Leu Asn Ala Arg Glu Glu Gln Asp Ile Glu Ile Met Met Glu
165 170 175

Gly Cys Glu Cys Ala Ile Ser Asn Ala Glu Ala Phe Ala Glu Lys Leu
180 185 190

Ser Arg Glu Leu Gln Val Leu Asp Gly Ala Asn Ile Gln Ser Ile Met
195 200 205

Ala Ser Glu Lys Gln Val Asn Thr Leu Met Gln Leu Leu Asp Glu Ala
 210 215 220

Leu Thr Glu Val Asp Gln Ile Glu Leu Lys Leu Ser Ser Tyr Glu Glu
 225 230 235 240

Met Leu Gln Ser Val Lys Glu Gln Met Asp Gln Ile Ser Glu Ser Asn
 245 250 255

His Leu Ile His Leu Ser Asn Thr Asn Asn Val Lys Leu Leu Ser Glu
 260 265 270

Ile Glu Phe Leu Val Asn His Met Asp Leu Ala Lys Gly His Ile Lys
 275 280 285

Ala Leu Gln Glu Gly Asp Leu Val Ser Ser Arg Gly Ile Glu Ala Cys
 290 295 300

Thr Asn Ala Ala Asp Ala Leu Leu Gln Cys Met Asn Val Ala Leu Arg
 305 310 315 320

Pro Gly His Asp Met Leu Leu Ala Ile Lys Gln Gln Gln Gln Arg Phe
 325 330 335

Ser Asp Leu Arg Glu His Phe Ala Arg Arg Leu Ala Ser His Leu Asn
 340 345 350

Asn Val Phe Val Gln Gln Gly His Asp Gln Ser Ser Thr Leu Ala Gln
 355 360 365

His Ser Val Glu Leu Thr Leu Pro Asn His His Pro Phe His Arg Asp
 370 375 380

Leu Leu Arg Tyr Ala Lys Leu Met Glu Trp Leu Lys Ser Thr Asp Tyr
 385 390 395 400

Gly Lys Tyr Glu Gly Leu Thr Lys Asn Tyr Met Asp Tyr Leu Ser Arg
 405 410 415

Leu Tyr Glu Arg Glu Ile Lys Asp Phe Phe Glu Val Ala Lys Met Lys
 420 425 430

Met Thr Gly Thr Ser Lys Glu Ser Lys Lys Phe Ala Thr Leu Pro Arg
 435 440 445

Lys Glu Ser Ala Val Lys Gln Glu Thr Glu Ser Leu His Gly Ser Ser
 450 455 460

Gly Lys Leu Thr Gly Ser Thr Ser Ser Leu Asn Lys Leu Ser Val Gln
 465 470 475 480

Ser Ser Gly Ser Arg Arg Ser Gln Ser Ser Ser Leu Leu Asp Met Gly
 485 490 495

Asn Met Ser Ala Ser Asp Leu Asp Val Ala Asp Arg Thr Lys Phe Asp
 500 505 510

Lys Ile Phe Glu Gln Val Leu Ser Glu Leu Glu Pro Leu Cys Leu Ala
 515 520 525

Glu Gln Asp Phe Ile Ser Lys Phe Phe Lys Leu Gln Gln His Gln Asn
 530 535 540

Met Ser Ala Ser Met Thr Glu Ala Glu Asp Leu Asp Gly Gly Ser Leu
 545 550 555 560

Ser Arg Gln His Ser Ser Gly Thr Leu Leu Pro Val Ser Ser Glu Lys
 565 570 575

Asp Met Ile Arg Gln Met Met Ile Lys Ile Phe Arg Cys Ile Glu Pro
 580 585 590

Glu Leu Asn Asn Leu Ile Ala Leu Gly Asp Lys Val Asp Ser Phe Asn
 595 600 605

Ser Leu Tyr Met Leu Val Lys Met Ser His His Val Trp Thr Ala Gln
 610 615 620

Asn Val Asp Pro Ala Ser Phe Leu Ser Thr Thr Leu Gly Asn Val Leu
 625 630 635 640

Val Thr Val Lys Arg Asn Phe Asp Lys Cys Ile Ser Asn Gln Ile Arg
 645 650 655

Gln Met Glu Glu Val Lys Ile Ser Lys Lys Ser Lys Val Gly Ile Leu
 660 665 670

Pro Phe Val Ala Glu Phe Glu Glu Phe Ala Gly Leu Ala Glu Ser Ile
 675 680 685

Phe Lys Asn Ala Glu Arg Arg Gly Asp Leu Asp Lys Ala Tyr Thr Lys
 690 695 700

Leu Ile Arg Gly Val Phe Ile Asn Val Glu Lys Val Ala Asn Glu Ser
705 710 715 720

Gln Lys Thr Pro Arg Asp Val Val Met Met Glu Asn Phe His His Ile
725 730 735

Phe Ala Thr Leu Ser Arg Leu Lys Ile Ser Cys Leu Glu Ala Glu Lys
740 745 750

Lys Glu Ala Lys Gln Lys Tyr Thr Asp His Leu Gln Ser Tyr Val Ile
755 760 765

Tyr Ser Leu Gly Gln Pro Leu Glu Lys Leu Asn His Phe Phe Glu Gly
770 775 780

Val Glu Ala Arg Val Ala Gln Gly Ile Arg Glu Glu Glu Val Ser Tyr
785 790 795 800

Val Arg Gly Gln Arg Ala Glu Phe Arg Asn Val Pro Ala Ala Trp Leu
 130 135 140

Ser Glu Lys Ser Pro Glu Lys Val Ala Leu Gly Arg Ala Val Gln Lys
 145 150 155 160

Thr Gln His Met Asp Asp Glu Glu Asp Glu Glu Glu Glu Ala Gln Glu
 165 170 175

Phe Thr Ala Leu Thr Asp Lys Glu Ala Asn Glu Leu Gly Lys Leu Phe
 180 185 190

Ser Glu Cys Asp Phe Ala Ile Lys Asp Ala Glu Gln Phe Ile Glu Gln
 195 200 205

Leu Ser Arg Glu Leu His Asp Leu Asp Gly Ala Asn Met Gln Ser Val
 210 215 220

Leu Ala Ser Glu Gln Lys Val Leu Lys Met Met Glu His Ile Asp Asn
 225 230 235 240

Ala Ile Ser Glu Ala Asp Lys Phe Glu Asn Arg Leu Asp Ser Tyr Glu
 245 250 255

Asp Ile Leu Gly His Val Lys Glu Thr Met Glu Lys Ile Gly Gly Lys
 260 265 270

Asn Ala Met Ile Glu Ile Ala Asn Asn Asn Ile Lys Leu Met Lys
 275 280 285

Glu Leu Asn Lys Val Ile Ser Gln Leu Asp Leu Pro His Ser Gln Gln
 290 295 300

Gln Ala Leu Asp Glu Pro Asp Leu Lys Thr Ala Asn Gly Arg Lys Ala
 305 310 315 320

Ala Ile Ala Ala Ala Gln Cys Leu Gln Gln Ala Met Asn Ser Asp Ile
 325 330 335

Asp Pro Ala Leu Leu Arg Leu Glu Ala Val Gln Asp Gln Arg Lys Arg
 340 345 350

Phe Glu Lys Trp Lys Gln Lys Phe Ser Ala Thr Val Ser Arg Phe Met
 355 360 365

Asn Asn Leu Phe Ile His Leu Gly Asn Glu Ile Gly Asp Met Gln Val

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Lys	Thr	Tyr	Asp	Gly	Leu	Met	Arg	Val	Tyr	Thr	Ala	Ser	Leu	Ser	Lys	
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Ile	Tyr	Asp	Arg	Asp	Val	Arg	Asn	Phe	Phe	Asn	Leu	Ala	Lys	Ile	Gln	
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Val	Thr	Glu	Lys	Leu	Arg	Asn	Ser	Arg	Glu	Asp	Leu	Asp	Met	Ser	Thr	
	450					455					460					
Ser	Ser	Arg	Lys	Ser	Ala	Val	Ser	Thr	Ile	Pro	Tyr	Gly	Thr	Leu	Gly	
465					470					475					480	
Ile	Asn	Arg	Asp	Gln	Trp	Gly	Pro	Gly	Val	Glu	Thr	Ala	Asp	Arg	Met	
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Arg	Phe	Asp	Ala	Leu	Leu	Glu	Lys	Val	Leu	Ala	Glu	Leu	Glu	Pro	Ile	
			500					505						510		
Ala	Leu	Gln	Glu	Gln	Leu	Phe	Cys	Ile	Asn	Phe	Phe	Gln	Met	Asp	Val	
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Ile	Ser	Pro	Thr	Thr	Lys	Asn	Thr	Gln	Thr	Thr	Leu	Glu	Met	Glu	Lys	
	530					535					540					
Ala	Val	Asp	Met	Thr	Gln	Ser	Ile	Ile	Ser	Gly	Ala	Val	Ser	Pro	Ser	
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Gly	Asp	Gly	Val	Pro	Gln	Lys	Arg	Ile	Asp	Arg	Gln	Ile	Asn	Glu	Asp	
				565					570					575		
Val	Arg	Lys	Leu	Met	Met	Gly	Leu	Phe	Gly	Cys	Leu	Glu	Pro	Glu	Leu	
			580				585						590			
Val	Ser	Phe	Ile	Gln	Ser	Phe	Glu	Arg	Val	Asp	Ser	Phe	Tyr	Ser	Leu	
		595					600					605				
Tyr	Val	Phe	Val	Arg	Leu	Thr	Gln	His	Val	Met	Ser	Ala	Gln	Asp	Thr	
	610					615					620					

His Ser Phe Leu Ser Met Thr Phe Ala Ser Ala Leu Val Gln Val Lys
 625 630 635 640

Arg Ser Phe Asp Arg Phe Met Gln Asn Gln Leu Leu Ser Ile Arg Glu
 645 650 655

Ala Lys Leu His Lys Arg Ser Lys Ala Ile Leu Pro Tyr Val Glu Asn
 660 665 670

Phe Glu Asn Phe Ala Gln Thr Ala Glu Gly Ile Phe Arg Lys Ser Asp
 675 680 685

Arg Arg Thr Asp Met Glu Lys Trp Tyr Leu Gln Leu Val Asn Ala Ile
 690 695 700

Phe Glu Gly Ile Gln Leu His Ser Gln Glu His Pro Lys Thr Pro Ile
 705 710 715 720

Gln Val Val Arg Met Glu Asn Tyr His His Met Tyr Ala Leu Leu Ala
 725 730 735

Gln Leu Lys Val Pro Gly Leu Asp Ala Leu Lys Lys Glu Ala Lys Lys
 740 745 750

Cys Tyr Asn Asp Ala Leu Lys Ala Tyr Val Thr Gln Tyr Phe Gly Arg
 755 760 765

Pro Leu Glu Lys Leu Asn Gln Phe Phe Glu Gly Val Gln Leu Lys Val
 770 775 780

Ala Gln Gly Val Lys Glu Thr Glu Ile Ser Tyr Gln Met Ala Phe Ser
785 790 795 800

Lys Gln Glu Leu Arg Lys Val Ile Ala Gln Tyr Pro Ala Arg Glu Val
805 810 815

Lys Lys Gly Leu Glu Asn Leu Tyr Lys Lys Val Glu Lys His Leu Ser
820 825 830

Glu Glu Glu Asn Leu Leu Gln Val Val Trp His Ala Met Gln Glu Glu
835 840 845

Phe Ile Ala Gln Tyr Asn Tyr Leu Glu Glu Arg Ile Gln Lys Cys Tyr
850 855 860

Ala Gly Ala Met Ile Asn Leu Glu Phe Asn Ile Gln Asp Ile Leu Ala
865 870 875 880

Phe Phe Ser Asp Ile Ala Arg Ser His
885